

Attorney Docket No. TI-34791

***Listing of the Claims:***

1. (Currently Amended) A method of DC offset estimation, said method comprising the steps of:

at a DC estimation circuit:

\_\_\_\_\_ determining a current maximum peak value of an input signal;

\_\_\_\_\_ determining a current minimum peak value of said input signal; and

\_\_\_\_\_ calculating an average of said current maximum peak value and said current minimum peak value to yield a DC offset estimate;

storing the DC offset estimate provided by the DC estimation circuit;

compensating the input signal using the DC offset estimate;

scaling the compensated input signal;

providing the scaled compensated input signal back to the DC estimation block in order to perform a fine DC offset estimation on the scaled compensated input signal.

2. (Currently Amended) A method of DC offset estimation, said method comprising the steps of:

determining a current maximum peak value of an input signal;

determining a current minimum peak value of said input signal;

calculating an average of said current maximum peak value and said current minimum peak value to yield a DC offset estimate; and

~~The method according to claim 1, wherein said step of determining said current maximum peak value comprises the steps of:~~

~~comparing said input signal with a previous maximum peak value;~~

~~if said input signal is greater than said previous maximum peak value, adding said current maximum peak value to a first difference between said input signal and said previous maximum peak value, said first difference multiplied by a maximum charge coefficient to yield said current maximum peak value; and~~

if said input signal is not greater than said previous maximum peak value, subtracting a second difference between said current maximum peak value and said input signal multiplied by a maximum discharge coefficient from said previous maximum peak value to yield said current maximum peak value.

3. (Original) The method according to claim 2, further comprising the step of applying a limiting function to said previous maximum peak value.

4. (Original) The method according to claim 2, further comprising the step of scaling said previous maximum peak value before comparison with said input signal.

5. (Original) The method according to claim 2, further comprising the step of generating said maximum charge coefficient and said maximum discharge coefficient in accordance with the occurrence of a specific event.

6. (Currently Amended) A method of DC offset estimation, said method comprising the steps of:

determining a current maximum peak value of an input signal;

determining a current minimum peak value of said input signal;

calculating an average of said current maximum peak value and said current minimum peak value to yield a DC offset estimate; and

~~The method according to claim 1, wherein said step of determining said current minimum peak value comprises the steps of:~~

~~comparing said input signal with a previous minimum peak value;~~

~~if said input signal is not greater than said previous maximum peak value, subtracting a first difference between said current minimum peak value and said input signal, said first difference multiplied by a minimum discharge coefficient and subtracted from said previous minimum peak value to yield said current minimum peak value; and~~

~~if said input signal is greater than said previous minimum peak value, adding said current minimum peak value to a second difference between said input signal and said previous~~

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minimum peak value, said second difference multiplied by a minimum charge coefficient to yield said current minimum peak value.

7. (Original) The method according to claim 5, further comprising the step of applying a limiting function to said previous maximum peak value.

8. (Original) The method according to claim 5, further comprising the step of scaling said previous maximum peak value before comparison with said input signal.

9. (Original) The method according to claim 5, further comprising the step of generating said minimum charge coefficient and said minimum discharge coefficient in accordance with the occurrence of a specific event.

10. (Currently Amended) The method according to claim 12, further comprising the step of subtracting said DC offset estimate from said input signal to yield a DC offset compensated output signal.

11. (Currently Amended) An apparatus for DC offset estimation, comprising:  
a DC estimation block for providing a DC offset estimate of an input signal;  
adaptive prescaler for scaling the compensated signal in order to provide a scaled signal;  
and  
a selector circuit for receiving the input signal and scaled signal and providing the scaled signal to the DC estimation block in order for the DC estimation block to perform a fine DC offset estimation of the scaled signal.  
~~first means for determining a current maximum peak value of an input signal;~~  
~~second means for determining a current minimum peak value of said input signal; and~~  
~~third means for calculating an average of said current maximum peak value and said current minimum peak value to yield a DC offset estimate.~~

12. (Currently Amended) An apparatus for DC offset estimation, comprising:  
first means for determining a current maximum peak value of an input signal;  
second means for determining a current minimum peak value of said input signal;

third means for calculating an average of said current maximum peak value and said current minimum peak value to yield a DC offset estimate; and

~~The apparatus according to claim 11, wherein said first means for determining said current maximum peak value comprises:~~

means for comparing said input signal with a previous maximum peak value;

means for adding said current maximum peak value to a first difference between said input signal and said previous maximum peak value, said first difference multiplied by a maximum charge coefficient to yield said current maximum peak value if said input signal is greater than said previous maximum peak value; and

means for subtracting a second difference between said current maximum peak value and said input signal multiplied by a maximum discharge coefficient from said previous maximum peak value to yield said current maximum peak value if said input signal is not greater than said previous maximum peak value.

13. (Original) The apparatus according to claim 12, further comprising means for applying a limiting function to said previous maximum peak value.

14. (Original) The apparatus according to claim 12, further comprising means for scaling said previous maximum peak value before comparison with said input signal.

15. (Original) The apparatus according to claim 12, further comprising means for generating said maximum charge coefficient and said maximum discharge coefficient in accordance with the occurrence of a specific event.

16. (Currently Amended) An apparatus for DC offset estimation, comprising:

first means for determining a current maximum peak value of an input signal;

second means for determining a current minimum peak value of said input signal;

third means for calculating an average of said current maximum peak value and said current minimum peak value to yield a DC offset estimate; and

~~The apparatus according to claim 11,~~ wherein said second means for determining said current minimum peak value comprises:

means for comparing said input signal with a previous minimum peak value;  
 means for subtracting a first difference between said current minimum peak value and said input signal, said first difference multiplied by a minimum discharge coefficient and subtracted from said previous minimum peak value to yield said current minimum peak value if said input signal is greater than said previous maximum peak value; and  
 means for adding said current minimum peak value to a second difference between said input signal and said previous minimum peak value, said second difference multiplied by a minimum charge coefficient to yield said current minimum peak value if said input signal is not greater than said previous minimum peak value.

17. (Original) The apparatus according to claim 16, further comprising means for applying a limiting function to said previous maximum peak value.

18. (Original) The apparatus according to claim 16, further comprising means for scaling said previous maximum peak value before comparison with said input signal.

19. (Original) The apparatus according to claim 16, further comprising means for generating said minimum charge coefficient and said minimum discharge coefficient in accordance with the occurrence of a specific event.

20. (Original) An apparatus for DC offset compensation, comprising:

first means for determining a current maximum peak value of an input signal comprising;  
 means for comparing said input signal with a previous maximum peak value;  
 means for adding said current maximum peak value to a first difference between said input signal and said previous maximum peak value, said first difference multiplied by a maximum charge coefficient to yield said current maximum peak value if said input signal is greater than said previous maximum peak value;  
 means for subtracting a second difference between said current maximum peak value and said input signal multiplied by a maximum discharge coefficient from

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said previous maximum peak value to yield said current maximum peak value if said input signal is not greater than said previous maximum peak value;

second means for determining a current minimum peak value of said input signal comprising;

means for comparing said input signal with a previous minimum peak value;

means for subtracting a first difference between said current minimum peak value and said input signal, said first difference multiplied by a minimum discharge coefficient and subtracted from said previous minimum peak value to yield said current minimum peak value if said input signal is greater than said previous maximum peak value;

means for adding said current minimum peak value to a second difference between said input signal and said previous minimum peak value, said second difference multiplied by a minimum charge coefficient to yield said current minimum peak value if said input signal is not greater than said previous minimum peak value;

third means for calculating an average of said current maximum peak value and said current minimum peak value to yield a DC offset estimate; and

fourth means for subtracting said DC offset estimate from said input signal to yield a DC offset compensated output signal.

21. (Original) A method of amplitude adjustment and DC offset compensation, said method comprising the steps of:

first performing coarse DC offset compensation comprising the steps of:

determining a first current maximum peak value of an input signal;

determining a first current minimum peak value of said input signal;

calculating an average of said first current maximum peak value and said first current minimum peak value to yield a first DC offset estimate;

subtracting said first DC offset estimate from said input signal to yield a first DC offset compensated signal;

scaling said first DC offset compensated signal to within a predefined range of amplitudes to yield a scaled signal;

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second performing fine DC offset compensation comprising the steps of:

- determining a second current maximum peak value of said scaled signal;
- determining a second current minimum peak value of said scaled signal;
- calculating an average of said second current maximum peak value and said second current minimum peak value to yield a second DC offset estimate; and
- subtracting said second DC offset estimate from said scaled signal to yield an output DC offset compensated signal.